




Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S4	4795	709/238-245.ccls.	US-PGPUB; USPAT	OR	OFF	2005/09/22 14:43
S7	9	S4 AND ((search\$3 NEAR8 parallel\$2) NEAR10 (address\$2 prefix\$2))	US-PGPUB; USPAT	OR	OFF	2005/09/22 15:04
S6	62	S4 AND (search\$3 NEAR8 parallel\$2)	US-PGPUB; USPAT	OR	OFF	2005/09/22 15:04
S5	6	S4 AND (scrambl\$3 NEAR4 address\$2)	US-PGPUB; USPAT	OR	OFF	2005/09/22 15:04
L2	413	(ip NEAR2 lookup) (long\$3 NEAR2 prefix NEAR2 (match\$3 search\$3))	USPAT	OR	OFF	2005/09/28 08:03
L1	1070	(ip NEAR2 lookup) (long\$3 NEAR2 prefix NEAR2 (match\$3 search\$3))	US-PGPUB; USPAT	OR	OFF	2005/09/28 08:03
L5	82	1 AND ((search\$3 match\$3 quer\$4) NEAR4 parallel)	USPAT	OR	OFF	2005/09/28 08:08
L11	20	("5136578" "5168492" "5745486" "5629930" "5881049" "6041040" "6088331" "6118792" "6034960" "6404735" "6667956" "6542511" "6580721" "6356546" "6339488" "6721271" "6570872" "6744775" "6646986" "6486983").pn.	USPAT	OR	OFF	2005/09/28 09:55
L12	1	11 AND ((search\$3 match\$3 quer\$4) NEAR4 parallel)	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:00
L14	227	13 AND 1	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:01
L13	21234	707/1-10.ccls. 709/238-244.ccls.	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:01
L8	79	4 AND prefix\$2	USPAT	OR	OFF	2005/09/28 10:01
L4	189	1 AND ((search\$3 match\$3 quer\$4) NEAR4 parallel)	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:01
L18	0	15 AND scrambl\$4	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:02
L3	22	1 AND scrambl\$4	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:02
L15	43	14 AND ((search\$3 match\$3 quer\$4) NEAR4 parallel)	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:11
L20	2	19 AND scrambl\$3.clm.	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:12
L19	763	((prefix prefixes) AND (address addresses)).clm.	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:12
L22	156	1 AND 21	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:13
L23	20	21 AND (index\$3 WITH (bit bits)).clm.	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:15
L21	329	19 AND (search\$3 match\$3).clm.	US-PGPUB; USPAT	OR	OFF	2005/09/28 10:15



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¹ [Corrections to "Routing on longest-matching prefixes"](#)
Willibald Doeringer, Günter Karjoth, Mehdi Nassehi
August 1997 **IEEE/ACM Transactions on Networking (TON)**, Volume 5 Issue 4
Full text available: [pdf \(15.22 KB\)](#)
Additional Information: [Full citation](#), [References](#), [Index Entries](#)

² [Forwarding: Longest prefix matching using bloom filters](#)
Sarang Dharmapurikar, Praveen Krishnamurthy, David E. Taylor
August 2003 **Proceedings of the 2003 conference on Applications, technologies, architectures, and protocols for computer communications**
Full text available: [pdf \(307.32 KB\)](#)
Additional Information: [Full citation](#), [References](#), [Index Entries](#)

We introduce the first algorithm that we are aware of to employ Bloom filters for Longest Prefix Matching (LPM). The algorithm performs parallel queries on Bloom filters, an efficient data structure for membership queries, in order to determine address prefix membership in sets of prefixes sorted by prefix length. We show that use of this algorithm for Internet Protocol (IP) routing lookups results in a search engine providing better performance and scalability than TCAM-based approaches. The ke ...

Keywords: IP lookup, forwarding, longest prefix matching

³ [Routing on longest-matching prefixes](#)
Willibald Doeringer, Günter Karjoth, Mehdi Nassehi
February 1996 **IEEE/ACM Transactions on Networking (TON)**, Volume 4 Issue 1
Full text available: [pdf \(1.43 MB\)](#)
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Relevance scale 

¹ [Efficient construction of multibit tries for IP lookup](#)

Sartaj Sahni, Kun Suk Kim

August 2003

IEEE/ACM Transactions on Networking (TON), Volume 11 Issue 4

Full text available:  pdf (07 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Srinivasan and Varghese (1999) have proposed the use of multibit tries to represent routing tables used for Internet (IP) address lookups. They propose dynamic programming algorithms to determine the strides of optimal multibit fixed-stride and variable-stride tries. We improve on these algorithms by providing alternative dynamic programming formulations for both fixed-and variable-stride tries. While the asymptotic complexities of our algorithms are the same as those for the corresponding algor ...

Keywords: controlled prefix expansion, dynamic programming, longest matching prefix, multibit trie, packet routing

² [IP lookups using multiway and multicolumn search](#)

Butler Lampson, Venkatachary Srinivasan, George Varghese

June 1999

IEEE/ACM Transactions on Networking (TON), Volume 7 Issue 3

Full text available:  pdf (17.06 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#), [review](#)

³ [Lookups: Dynamic pipelining: making IP-lookup truly scalable](#)

Jahangir Hasan, T. N. Vijaykumar

August 2005

Proceedings of the 2005 conference on Applications, technologies, architectures, and protocols for computer communications SIGCOMM '05

Full text available:  pdf (154.82 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A truly scalable IP-lookup scheme must address five challenges of scalability, namely: routing-table size, lookup throughput, implementation cost, power dissipation, and routing-table update cost. Though several IP-lookup schemes have been proposed in the past, none of them do well in all the five scalability requirements. Previous schemes pipeline tries by mapping trie levels to pipeline stages. We make the fundamental observation that because this mapping is static and oblivious of the prefix ...

Keywords: IP-lookup, longest prefix matching, pipelined, scalable, tries

⁴ [Full papers: Tree bitmap: hardware/software IP lookups with incremental updates](#)

Will Eatherton, George Varghese, Zubin Dittia

April 2004

ACM SIGCOMM Computer Communication Review, Volume 34 Issue 2

Full text available:  pdf (193.21 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Even with the significant focus on IP address lookup in the published literature as well as focus on this market by commercial semiconductor vendors, there is still a challenge for router architects to find solutions that simultaneously meet 3 criteria: scaling in terms of lookup speeds as well as table sizes, the ability to perform high speed updates, and the ability to fit into the overall memory architecture of an Level 3 forwarding engine or packet processor with low systems cost overhead. I ...

⁵ [IPStash: a Power-Efficient Memory Architecture for IP-lookup](#)

Stefanos Kaxiras, Georgios Keramidas

December 2003

Proceedings of the 36th annual IEEE/ACM International Symposium on